



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,073	02/26/2004	Tae-youn Heor	1793.1201	4848
21171 7590 05/01/2008				
STAAS & HALSEY LLP				
SUITE 700				
1201 NEW YORK AVENUE, N.W.				
WASHINGTON, DC 20005				
EXAMINER				
ALUNKAL, THOMAS D				
ART UNIT		PAPER NUMBER		
2627				
MAIL DATE		DELIVERY MODE		
05/01/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/786,073

Applicant(s)

HEOR ET AL.

Examiner

THOMAS D. ALUNKAL

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6, 9-11, 13-17, 19-21 and 23-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 9-11, 13-17, 19-21 and 23-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Final Drawing Review (PTO-849)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Response to Arguments

Regarding Applicant's arguments beginning on page 11 and continuing on page 12 of Remarks, Applicant argues that the rejection of claim 4, which has now been amended into claim 1, was improper. After reviewing Applicant's arguments, the Examiner agrees with this assertion and the previous grounds of rejection pertaining to claim 4 are withdrawn. However, after further consideration, a new grounds of rejection is made, which will be explained in further detail in the Detailed Action to follow.

Regarding Applicant's arguments beginning on page 12 and continuing on page 13 of Remarks, Applicant argues that the rejection of claim 5, which has now been amended into claim 1, was improper. The Examiner respectfully disagrees. Applicant argues that the "third order coma aberration components of wave front aberration" disclosed by Nagashima et al. do not become "a same type of aberration". However, upon further review of claim 5, claim 5 requires that wavefront aberration occurring due to a tilt of the objective lens and a wavefront aberration occurring due to a tilt of the incident light on the objective lens become a same type of aberration. In other words, the aberration occurring due the tilt of the objective lens and incident light are the same aberration. However, tilting the objective lens inherently provides a tilt of the light incident on the objective lens incident surface. Thus, both the wavefront aberration occurring due to a tilt of the objective lens and the wavefront aberration occurring due to a tilt of the light incident on the objective lens are the same type of aberration. The rejection of subject matter of claim 5 will be reiterated in the Detailed Action to follow.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6, 9-11, 13-17, 19, 21, 23-32, and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al (hereafter Ueda) (US 6,314,064), Hayashi et al. (hereafter Hayashi)(US 6,775,065), Kim et al (hereafter Kim)(US PgPub 2003/0103441) and Nagashima et al. (hereafter Nagashima)(US 6,304,526).

Regarding claim 1, Ueda discloses a compatible optical pickup which can be compatibly used for first through third recording media having different recording densities and formats (Column 4, lines 7-21), comprising: a first light source which emits a first light beam having a first wavelength suitable for the first recording medium (Figure 1, Element 28); a twin light source which emits second and third light beams respectively having second and third wavelengths suitable for the corresponding second and third recording media (Figure 1, Element 31 and Figure 5, Element 55,56); a first objective lens which condenses the first light beam to form a light spot for recording and/or reproduction of the first recording medium (Figure 1, Element 22); a second objective lens which condenses the second and third light beams to form light spots for recording and/or reproduction of the received one of the second and third recording media (Figure 1, Element 34); an actuator which drives the first and second objective

lenses (Figures 2 and 3 and Column 5, lines 53-55); a first photo-detector which receives the first light beam reflected from the first recording medium to detect an information signal and/or an error signal (Figure 1, Element 28); and a second photo-detector which receives the second and third light beams reflected from the received one of the second and third recording media to detect information signals and/or error signals (Figure 5, Elements 57 and 58), wherein the first objective lens forms a first numerical aperture for use with the first optical medium (Figure 1, Elements 34 and 6) and a second numerical aperture other than the first numerical aperture for use with the second optical medium (Figure 1, Elements 34 and 7. It is noted that it is an inherent property of NA to change with differing wavelength light), and the second objective lens forms a third numerical aperture which is other than the first and second numerical apertures for use with the third optical medium (Figure 1, Elements 22 and 8). Ueda does not disclose a plate-type beam splitter which transmits and reflects the second and third light beams in a predetermined ratio. In the same field of endeavor, Hayashi discloses the conventional use of a plate-type beam splitter which transmits and reflects two different wavelengths of light in a predetermined ratio in a compatible optical pickup device (Figure 1, Element 30 and Column 4, lines 40-53).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to provide the plate-type beam splitter of Hayashi to the compatible optical pickup device of Ueda, motivation being to effectively transmit and reflect incident light to each of the optical disc and detecting element, which results in proper read-out.

Ueda also discloses a working distance (WD1) of one of the first and second objective lenses (Figure 1, the distance between Elements 34 and 6/7), a working distance (WD2) of the other one of the first and second objective lenses which has a long working distance (Figure 1, the distance between Elements 22 and 8). However, Ueda does not disclose where the first and second objective lenses are installed to satisfy the below relationship so as to prevent the one objective lens having the short working distance from contacting the received one of the first through third recording media during loading of the received recording medium and while allowing operation of the other one of the first and second objective lenses having the work distance: $WD2$ is greater than or equal to $WD1$ and a basic separating distance of the one objective lens relative to the corresponding one of the first through third recording media is $WD1 + \alpha$, and $\alpha = |WD2 - WD1| \times (0.1 \sim 1.0)$. In the same field of endeavor, Kim discloses a compatible optical pickup which uses two objective lenses which satisfy: $WD2$ is greater than or equal to $WD1$ and a basic separating distance of the one objective lens relative to the corresponding one of the first through third recording media is $WD1 + \alpha$, and $\alpha = |WD2 - WD1| \times (0.1 \sim 1.0)$ which prevents contact between the closer objective lens and the optical disc (Figure 7 and 0055-0058).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to provide the working distance parameters of Kim to the compatible optical pickup device of Ueda, motivation being to prevent undesirable contact, which results in deterioration and improper read-out, between the objective lens and the optical disc.

Furthermore, Ueda does not disclose wherein at least one of the first and second objective lenses is formed so that a wavefront aberration occurring mainly due to a tilt of the objective lens and a wavefront aberration occurring mainly due to a tilt of light incident on the objective lens become a same type of aberration. In the same field of endeavor, Nagashima discloses wherein at least one of the first and second objective lenses is formed so that a wavefront aberration occurring mainly due to a tilt of the objective lens and a wavefront aberration occurring mainly due to a tilt of light incident on the objective lens become a same type of aberration (Column 5, lines 5-24).

One of ordinary skill in the art at the time of the applicant's invention would have found it obvious to provide the aberration correction means of Nagashima to the compatible optical pickup device of Ueda, motivation being to eliminate unwanted aberrations in the optical system which lead to a deterioration in writing/reproducing to and from the disc.

Regarding claim 2, Ueda discloses wherein the actuator comprises: a single lens holder to hold the first and second objective lenses (Figure 2, Element 36); and a magnetic circuit which drives the single lens holder in a direction (Figures 2 and 3, Element 37 and Column 5, lines 53-55).

Regarding claim 3, Ueda discloses wherein the single lens holder holds the first and second lenses at different heights above a common surface (Column 5, lines 10-16. Lens 22 is adjustable to different heights above the optical disc. Thus, first and second lenses are at different heights above a commons surface).

Regarding claim 6, Ueda discloses wherein one of the first through third recording media is a CD-family optical disc (Column 4, lines 4-7), another is a DVD-family optical disc (Column 4, lines 7-9), and the other is a next generation DVD-family optical disc which has a higher density than the DVD (Column 4, lines 14-16).

Regarding claim 9, this claim contains limitations similar to those of claim 6 and is rejected for the same reasons provide above..

Regarding claim 10, Ueda discloses wherein the second photo-detector comprises first and second main photo-detectors (Figure 5, Elements 57 and 58) which receive the second and third beams respectively (Column 7, lines 41-46).

Regarding claim 11, Ueda discloses a grating which diffracts the second and/or third light beams emitted from the twin light source into at least three beams (Figure 5 discloses three beams emitted from light sources 55 and 56. Thus, the grating is inherently provided within laser coupler 31), wherein the second photo-detector further comprises a plurality of sub photo-detectors which receive sub beams split by the grating (Figure 6, Elements 57 and 58).

Regarding claim 13, Nagashima discloses wherein at least one of the first and second objective lenses is formed so that a wavefront aberration occurring mainly due to a tilt of the objective lens and a wavefront aberration occurring mainly due to a tilt of light incident on the objective lens become a coma aberration (Column 5, lines 5-24).

Regarding claim 14, Ueda discloses wherein one of the first through third recording media is a CD-family optical disc (Column 4, lines 4-7), another is a DVD-

family optical disc (Column 4, lines 7-9), and the other is a next generation DVD-family optical disc which has a higher density than the DVD (Column 4, lines 14-16).

Regarding claim 15, Ueda discloses wherein the next generation DVD-family disc has a thickness of about 0.1mm (Column 4, lines 16-18), is recorded and/or reproduced using a blue violet beam (Column 4, 48-51, which encompasses the blue-violet wavelength band), and the one of the first and second objective lenses used for the next generation DVD-family optical disc has a numerical aperture of at or more than 0.85 (Column 5, lines 1-3).

Regarding claim 16, Ueda discloses a recording and/or reproducing apparatus for use with first through third optical media having corresponding thicknesses (Column 4, lines 37-47) comprising the compatible optical pickup of claim 1 which is compatible for recording and/or reproducing with respect to each of the first through third optical media (Column 4, lines 37-47), and a controller to control the compatible optical pickup to recording and/or reproduce data with respect to a received one of the first through third optical media (Figure 8, which displays focus controller).

Regarding claim 17, this claim contains limitations similar to those of claims 1, 10, and 16, and is rejected for the same reasons of obviousness provide above.

Regarding claim 19, Ueda discloses wherein the third numerical aperture is not usable with the first and second optical media (Column 5, lines 1-5. A numerical aperture of 0.85 is specifically used for the high density recording media).

Regarding claim 21, this claim contains limitations similar to those of claim 2 and is rejected for the same reasons provide above..

Regarding claim 23, Kim discloses wherein the second working distance is greater than the first working distance by a working distance difference, and the first objective lens is disposed at a basic separating distance relative to an upper surface of the received one of the first and second optical media that is at or between 10% and 100% of the working distance difference greater than the first working distance (Figure 7 and 0055-0058).

Regarding claim 24, Ueda discloses wherein the optical property of the first objective lens comprises a holographic pattern which has a first numerical aperture with respect to the first light beam having a first wavelength for use in recording and/or reproducing data with respect to the first optical medium, and a second numerical aperture with respect to the second light beam having a second wavelength other than the first wavelength for use in recording and/or reproducing data with respect to the second optical medium (Figure 1, Element 33 and Column 5, lines 40-49. Note, it is an inherent property of the objective lens to change NA with changing incident wavelength).

Regarding claim 25, Ueda discloses wherein the optical property of the first objective lens is optimized for recording and/or reproducing with respect to the first optical recording medium and is usable for recording and/or reproducing with respect to the second optical medium (Figure 1, Element 34 and Figure 5, Elements 56 and 57. Specifically, objective lens 34 is used to focus laser light of a respective wavelength onto optical media (Figure 1, Elements 6 and 7), and the second objective lens is optimized for use with the third recording medium (Figure 1, Elements 8 and 22).

Regarding claim 26, this claim contains limitations similar to those in claim 14 and is rejected for the same reasons provided above.

Regarding claim 27, Ueda discloses wherein the third light beam has a wavelength that is less than a wavelength of the first light beam (Column 4, lines 48-51 and Column 10, lines 27-30).

Regarding claim 28, Ueda discloses wherein the wavelength of the third light beam is substantially 405nm (Column 4, lines 48-51, which encompasses the blue-violet wavelength band).

Regarding claim 29, this claim contains limitations similar to those of claims 14 and 15 and is rejected for the same reasons of provided above.

Regarding claim 30, this claim contains limitations similar to those in claim 13 and is rejected for the same reasons provide above.

Regarding claim 31, Ueda discloses wherein the optical system compensates for the common aberration by moving a light emitting portion of the corresponding one of the first and second optical units within a plane perpendicular to the corresponding optical pathway (Figure 3, specifically, the directions Y1 and Y2, which show the movement directions).

Regarding claim 32, this claim contains limitations similar to those of claim 16 and is rejected for the same reasons provide above.

Regarding claim 37, Ueda discloses a grating which diffracts the first and or second light beams emitted from the first optical unit into at least three beams (Figure 1 discloses three beams emitted from light source 16. Thus, the grating is inherently

provided within optical unit 11), and first and second photo-detectors for detecting first and second light beams, respectively, the photo-detectors comprising a plurality of sub photo-detectors which receive sub beams split by the grating (Figure 1, Element 28 and Figure 5, Element 57).

Regarding claim 38, Ueda discloses a sensing lens disposed between the plate-type beam splitter and the photo-detector and focuses the first light beam on the photo-detector (Figure 1, Element 27).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda, Hayashi, Kim, and Nagashima, as applied to claims 1-3, 6,9-11, 13-17, 19, 21, 23-32, and 37-38, and further in view of Applicant's Admitted Prior Art.

Regarding claim 20, Ueda discloses the third numerical aperture is greater than 0.6 (Column 5, lines 1-5). Ueda, Hayashi, Kim, and Nagashima do not disclose wherein the first and second numerical apertures are at or less than 0.6. However, Applicant's Admitted Prior Art discloses that the objective lens numerical apertures for CDs and DVDs are 0.45 and 0.6, respectively.

One of ordinary skill in the art at the time of the applicant's invention would have found it obvious to provide the optical pickup device of Ueda, Hayashi, Kim, and Nagashima with the specific numerical apertures of the Applicant's Admitted Prior Art, motivation being to ensure quality read/write operations on the various optical media.

Claims 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda, Hayashi, Kim, Nagashima, and in view of Choi (US PgPub 2002/0054559).

Regarding claim 33, this claim recites limitations substantially similar to those in claim 1. Therefore, these limitations are disclosed for the same reasons as provided above. However, Ueda does not disclose a triaxial actuator which moves a moving unit in the first and second objective lenses in any of an optical axis direction, a radial direction and a tilting direction. In the same field of endeavor, Choi discloses a triaxial actuator used in an optical pickup which provides movement in any of an optical axis direction, a radial direction and a tilt direction (Paragraphs 0026 and 0030-0032).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to provide the triaxial actuator of Choi to the compatible optical pickup device of Ueda, motivation being to more accurately access a disc (Paragraph 0113 of Choi).

Regarding claim 34, this claim contains limitations similar to those of claim 23 and is rejected for the same reasons provide above.

Regarding claim 35, Ueda, Hayashi, Kim, Nagashima, and Choi do not specifically disclose two mutually separate actuators used to drive first and second objective lens respectively. Rather, Choi discloses one actuator used to drive one objective lens.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide two mutually separate actuators used to drive

Art Unit: 2627

first and second objective lens, respectively, to the compatible optical pickup device of Udea and Choi since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claim 36, Choi discloses wherein the holding unit is formed so as to install the first and second objective lenses in the radial direction of the optical disc (Column 5, lines 33-35 and Figures 2 and 3).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS D. ALUNKAL whose telephone number is (571)270-1127. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571)272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas D Alunkal/
Examiner, Art Unit 2627

/Thang V. Tran/
Primary Examiner, Art Unit 2627